

Entrepreneurial Motivations in the European Union Countries: An Empirical Approach

Valentina Diana RUSU

Alexandru Ioan Cuza University
54 Lascar Catargiu St., 700107, Iași, RO
Valentinadiana.ig@gmail.com

Angela ROMAN

Alexandru Ioan Cuza University
11 Carol I Boulevard, 7005067, Iași, RO
aboariu@uaic.ro

Abstract. *Entrepreneurship is considered a significant determinant for the economic development of a country but is also important for new job creation and innovation. Understanding and examining the factors which affect the decision of individuals to become entrepreneurs play a significant role for the decision makers in order to identify the adequate measures that can support and develop the entrepreneurial activity. The main purpose of this paper is to identify the key factors that determine entrepreneurial motivations of individuals, but also to analyze empirically the impact of these factors for a sample of 18 countries members of the European Union, for a period between 2002 and 2015. We performed our empirical analysis using data offered by the Global Entrepreneurship Monitor and the World Bank. We used panel data regression models. As dependent variables for our econometric models, we used, alternatively, total entrepreneurial activity rate, necessity driven entrepreneurial activity, and opportunity-driven entrepreneurial activity. As regards the independent variables considered, we took into account six macroeconomic indicators and four indicators which measure the perceptions and attitudes regarding entrepreneurship. The results of the panel data regression models show that the entrepreneurial motivations are influenced by the level of economic development of a country and total tax rate (only necessity entrepreneurs), unemployment rates, inflation rates and access to financial resources. Also, all the considered perceptual indicators (fear of failure, entrepreneurial intentions, perceived capabilities, and opportunities) have a significant effect on entrepreneurship according to its motivation, but these effects differ according to the motivation of individuals. Overall, this paper emphasizes that the economic conditions from an EU country but also the perception of entrepreneurs are important determinants of entrepreneurial motivation.*

Keywords: *entrepreneurial motivations; entrepreneurial perception; EU countries; panel data.*

Introduction

The major role of entrepreneurship for the economic development of a country but also for job creation and innovation is widely recognized. Persons who start and are interested in developing their own business are considered important agents of change that accelerate the generation, application and spread of innovative ideas (Wolters, 2000). The theoretical and empirical studies in the field approach the importance of entrepreneurship but also its impact on economic growth. We can also highlight the intensification of the recent preoccupations of the European Commission and of public authorities from European Union countries to encourage and stimulated entrepreneurship in order to sustain the development of national economies.

The entrepreneurial activity from a country is influenced by a lot of factors, among which we can mention: the level of development of national economy, the institutional environment, national cultural specificities (Acs, Desai, & Hessels, 2008; Amorós, Borraz, & Veiga, 2016; Amorós, Ciravegna, Mandakovic, & Stenholm, 2017; Aparicio, Urbano, & Audretsch, 2016; Bosma & Schutjens, 2011; Chowdhury, Terjesen, & Audretsch, 2015; Freytag & Thurik, 2007; Gries & Naudé, 2009; Simón-Moya, Revuelto-Taboada, & Guerrero, 2014; Stenholm, Acs, & Wuebker, 2013; Van Stel, Storey, & Thurik, 2007; Wennekers, Uhlaner, & Thurik, 2002; Wennekers, van Stel, Thurik, & Reynolds, 2005)

To promote and sustain entrepreneurship is very important to know and understand the entrepreneurial motivations, but also the factors that might affect the decision to become an entrepreneur. Some studies (Lynch, Slíttvein, Lozano, Steinert, & Andersson, 2017; Robichaud, LeBrasseur, & Nagarajan, 2010; Stephan, Hart, Mickiewicz, & Drews, 2015) have highlighted that entrepreneurial motivations can be intrinsic and extrinsic, and are very varied, starting from the desire of individuals to increase their independence and up to financial motivations, and some factors related to family but also work-related factors.

The Global Entrepreneurship Monitor (GEM) is considering and analyzing the entrepreneurial motivations, starting from the main reason of individuals who decided to start a new business, namely: opportunity driven entrepreneurship and necessity driven entrepreneurship (Reynolds, Camp, Bygrave, Autio, & Hay, 2001). These reasons are influenced by numerous external and internal factors. Opportunity entrepreneurs represent those individuals who decide to start up a new business for pursuing an opportunity. On the other hand, necessity motivated entrepreneurs to represent the people who have to start a new business because they cannot find another job or the options that exist on the market do not give them an income necessary for living. Identifying the main factors that affect the motivations of entrepreneurs is of interest for the researchers in the field, but also for the policy makers, because it can help them when deciding, so as to adopt the most appropriate measures to support entrepreneurship and its development.

The ideas presented above have determined the main objective of our paper. Thus, through our research, we aim to empirically examine the impact of some of the

mentioned factors on the decision of individuals to become entrepreneurs taking into account their main motivation to engage in entrepreneurship, respectively necessity or opportunity reasons. Also, we intend to identify if there are important differences on how certain factors affect the entrepreneurs according to their motivation. The results of our investigation could be useful to decision-makers at different levels, concerned to identify adequate measures in order to support and develop the entrepreneurial activity.

Moreover, after the recent financial crisis, the economic recession and the increase of unemployment have brought again to the attention of researchers the problem of the factors that might determine entrepreneurship. In this context, our paper aims to identify the main determinant factors of the level of entrepreneurial activity, total and by categories of motivation (necessity and opportunity), for 18 European Union member states, using data for the period 2002-2015. For the analysis, we consider 6 macroeconomic indicators and 4 indicators which measure the perceptions and attitudes regarding entrepreneurship.

In order to reach our objective, we have structured our study as follows: section 2 presents a brief literature review, focusing on identifying previous findings regarding the main factors that influence entrepreneurial activity, but also necessity-driven entrepreneurs and opportunity-driven entrepreneurs; section 3 presents the methodology, describing the data, the variables included in the analysis and also the econometric methods used; section 4 emphasizes the main empirical results obtained and discusses these results, and the last section presents the concluding remarks.

Literature review

Entrepreneurship is considered to be the result of the interaction between internal and external factors (Smith-Hunter, Kapp, & Yonkers, 2003). Moreover, not all the individuals who decide to become entrepreneurs respond in the same way to the external environment. Some individuals react to a perceived market opportunity, while others are forced into starting a business because of some unfavorable circumstances. That's why many studies in the literature focus on identifying the factors that have an important influence on entrepreneurial activity and entrepreneurship motivations in different countries or groups of countries, by categories of indicators.

Therefore, between the mentioned studies we find the one made by Grilo and Thurik (2004). The empirical analysis of these two authors is made on a sample of countries and is focusing on the impact of some explanatory variables, such as socio-demographic variables, perception and preference variables, on entrepreneurship. In another study, Grilo and Thurik (2005) show that country-specific effects play an important role in explaining the differences between countries with regard to the level of entrepreneurship. Other studies (Thurik, Martin, Carree, van Stel, & Audretsch, 2008) examine the relation between self-employment and unemployment rates for a sample of 23 countries, for a longer period between 1974

and 2002. Their results show that the relation between self-employment and unemployment rates can be both positive and negative. The studies mentioned above, along with other studies (Shane, 2008; Vidal-Suñé & Lopez-Panisello, 2013) have also tested the effects of Gross Domestic Product and Gross Domestic Product per capita growth on the entrepreneurial activity. The results showed that these indicators are important determinants of entrepreneurial activity because an increase in income might determine the increase of the demand for the goods and services on the market, and thus is stimulating entrepreneurial activity. From another point of view, Shane (2008) showed that the variation of GDP has a different effect on entrepreneurship according to the characteristics of the country considered. The author emphasized that for richer countries, the rates of self-employment were lower because when the incomes are rising people can opt for better pays jobs than the incomes that might come from running their own businesses. On the other hand, in poorer countries there exist fewer high-paying jobs and many people decide to set up a new business to secure their living income.

Using different regression methods, Kim, Kim, and Yang (2010) realized an empirical analysis on the impact of public policy (finance, labor, and tax policy) on entrepreneurial activity in the 28 countries of OECD. Their results highlight that the government expenditure on economic affairs and education have an important role in promoting entrepreneurship, and that an increase in the public expenditure for stimulating start-ups increases the level of entrepreneurial activity. Bosma and Schutjens (2011) also conducted an empirical analysis on the national and regional conditions on entrepreneurial attitude and activity for 127 regions across 17 European countries, for the period 2001-2006. Their results indicate the importance of certain economic and institutional factors, but also of demographic characteristics on the variations of the attitudes regarding entrepreneurship but also of entrepreneurial activity. Ardagna and Lusardi (2008), Ho and Wong (2005), and Van Stel et al. (2007) highlight the role of the regulatory environment in the decision of a person to become an entrepreneur.

Vliamos and Tzeremes (2012) indicate three types of factors that would affect the entrepreneurship, namely knowledge-based factors (e.g., education, skills, experience), behavioral factors (e.g., desire of independence, locus of control), and environmental factors (e.g., access to finance, the economic and institutional environment). The results of their empirical analysis show that the three most important factors that affect the setup of a business are the institutional environment, the availability of finance, and the level of education.

More recent studies (Albulescu & Tămășilă, 2014; Amorós et al., 2016, 2017; Angulo-Guerrero, Pérez-Moreno, & Abad-Guerrero, 2017; Fuentelsaz, González, Maícas, & Montero, 2015; Sayed & Slimane, 2014) empirically analyze the economic and institutional determinants of the entrepreneurial activity and entrepreneurial motivations. According to their results, the most important determinants of the entrepreneurial activity and entrepreneurial motivations are represented by the stage of economic development, population growth, employment, institutional quality, the level of education, macroeconomic stability, the level of economic freedom and technological development. Therefore, Lasch, Gundolf, and Kraus

(2007) realized an empirical analysis of all new firms created between 1993 and 2001 in France (2.8 million firms) and showed that entrepreneurship in France seems to be especially necessity driven, outmatching factors like agglomeration economies and industry structure.

Using data which concerns 100 countries, Klapper, Love, and Randall (2015) examine the relationship between entrepreneurship and economic growth, but also how differences between countries in terms of financial development and business environment influence the intensity of the correlation between business cycle and entrepreneurship. The results of the study indicate a positive and significant relationship between economic growth and entrepreneurship, as well as a strong connection between business environment and entrepreneurship in countries with more developed financial systems and better business environments. Also, the authors emphasize that the level of entrepreneurship varies significantly between economies and regions due to differences in macroeconomic conditions, financial development, and the business environment.

Stephan et al. (2015) shows that motivations for entrepreneurship are related most clearly to entrepreneurs' demographic characteristics, such as: age, gender, education and household income, but also with the personal situation of the individual at the start of new business: employment status, cross-over with previous job, family commitments, role models, and the characteristics of the start-up business itself: starting alone versus with others, industry sector of start-up. Also, this report highlights the important role of macroeconomic environment, which can present important opportunities for starting entrepreneurs but also can discourage the new business.

There are many research papers that distinguish between opportunity and necessity entrepreneurs (Amorós & Stenholm, 2014; Amorós et al., 2016, 2017; Angulo-Guerrero et al., 2017; Ardagna & Lusardi, 2009; Block & Wagner, 2010; Fuentelsaz et al., 2015; Reynolds et al., 2005; Simón-Moya et al., 2014; Sternberg & Wennekers, 2005; Valdez & Richardson, 2013). The studies in the field highlight that the factors that are influencing entrepreneurship are different according to the entrepreneurial motive (Wennekers et al., 2005; Wong, Ho, & Autio, 2005). Also, Wennekers et al. (2005) and Levie and Autio (2008) highlight the importance of considering also the country conditions to explain the determinants of opportunity and necessity entrepreneurial decisions. Albiol-Sanchez (2014) showed that developed countries with high exit rates tend to experience a lower growth rate of new business activity and opportunity-driven entrepreneurship because the entrepreneurs see wage employment as a better and more secure choice.

Our study makes a significant contribution, completing the scientific literature in the field by supplying empirical evidence on the key determinants of the entrepreneurial motivation in 18 European Union member states, realizing a more extensive analysis and for a recent period, 2002-2015.

Methodology

The purpose of our empirical investigation is to identify which one of the considered indicators measuring macroeconomic conditions and the perceived abilities of individuals and their attitudes towards entrepreneurship have a significant effect on entrepreneurial motivation from the European Union countries. To quantify entrepreneurial motivations, we started from the indicators used by Global Entrepreneurship Monitor (GEM) for measuring entrepreneurial activity. Thus, we have used as a proxy for the level of total entrepreneurial activity, the *Total Entrepreneurial Activity (TEA) rate*. *TEA rate* represents the percent of working age population (between 18 and 64 years) that are either in the process of starting a new business or have just started one which has been on the market for less than 42 months. *TEA rate* has as components two groups of entrepreneurs: nascent entrepreneurs and new business owners. The first group, formed by nascent entrepreneurs, represents those individuals who have the age to work and are involved in the process of starting a new business they will own or co-own. Also appears the condition that this business has not paid salaries, wages, or any other payments for more than 3 months. While new business owners include those individuals who have moved beyond the nascent stage and have paid salaries and wages for more than 3 months but less than 42 months. For gathering the data GEM used telephone interviews (in the more developed countries) and also face-to-face interviews (in developing countries).

Also, for measuring entrepreneurial motivation we have used two indicators, respectively necessity-driven entrepreneurial activity and improvement-driven opportunity entrepreneurial activity, which are defined in accordance with GEM methodology: *necessity driven entrepreneurial activity (NEA)* expresses the percent of those individuals involved in TEA who have chosen to become self-employed because they could not find other option for work. Comparatively, *improvement driven opportunity entrepreneurial activity (OEA)* represents the percent of the individuals who are a part of TEA and who motivate that decide to become self-employed because are seeking opportunity compared to finding no other option for work, and are also indicating that the reason for becoming entrepreneur is because they want to be independent or even increase their income, not just maintaining their income.

The decision to become an entrepreneur can be affected by a series of macroeconomic and perceptual indicators, indicators that we have chosen as the explanatory variables of our models. The annual data for the explanatory variables and for the dependent variables are obtained from the Global Entrepreneurship Monitor (GEM) database, and World Bank DataBank, for the period 2002-2015, for 18 European Union member countries (Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Netherlands, Portugal, Romania, Slovenia, Spain, Sweden, and United Kingdom). The selection of the 18 European Union countries was made according to the availability of data for the entire period considered for each indicator. The data from GEM are harmonized with all the national level indicators so it is easier to make comparisons between countries regarding the entrepreneurial activity.

We have included the explanatory variables in two categories: variables expressing macroeconomic conditions and variables expressing the perceived abilities and attitudes towards entrepreneurship. For the first group of indicators, we have considered six variables: GDP growth, GDP per capita growth, unemployment, tax rate, inflation and domestic credit to private sector. The growth of *Gross Domestic Product (GDP)* and *Gross Domestic Product (GDP) per capita* are important macroeconomic variables influencing the entrepreneurial activity. GDP per capita growth plays an important role for the entrepreneurial activity because an increase in income can determine an increase of the demand for a many goods and services that would expand entrepreneurial activity, especially the creation of new business (Grilo & Thurik 2004; Klapper, Amit, Mauro, & Delgado, 2007; Sayed & Slimane, 2014; van Stel, Wennekers, Reynolds, & Thurik, 2004; Vidal-Suñé & Lopez-Panisello, 2013).

The growth of GDP has also an important role for entrepreneurship but from a different angle, as shown by Shane (2008). This author obtained evidence that for richer countries the rates of self-employment have declined, the growth of GDP is negatively correlated to entrepreneurship because when the incomes are rising there appear more lucrative employment opportunities than running own business. In poorer countries there exist fewer high-paying jobs and many people decide to become entrepreneurs earn a living, and in richer countries, people find more attractive employment options than running their own businesses. Other empirical studies (Albiol, 2014; Naudé, 2009; Reynolds et al., 2001; Wennekers et al., 2005), which have considered also the motivations of entrepreneurship, show that the number of opportunity entrepreneurs increases when the economic development of a country is higher, while the number of the necessity entrepreneurs decreases. Therefore, we formulate the following hypotheses:

Hypothesis 1a: GDP per capita growth is positively associated with total entrepreneurship while GDP growth is negatively associated.

Hypothesis 1b: Higher economic development is positively associated with opportunity motivated entrepreneurs and negatively motivated with necessity entrepreneurs.

Another macroeconomic indicator with an important influence on entrepreneurial activity is *unemployment rate (unempl)*. The literature in the field did not reach a consensus regarding the sign of the relationship between unemployment rates and entrepreneurship, thus, this sign can be either positive or negative depending on macroeconomic conditions (Bosma & Schutjens 2011; Grilo & Thurik, 2004; Sayed & Slimane 2014; Thurik et al., 2008; van Stel et al., 2004; Vidal-Suñé & Lopez-Panisello, 2013).

In times of recession, the unemployment rate is rising and this increase may determine a reduction in the level of entrepreneurship, due to a significant reduction of the demand for goods and services that reduce business opportunities. But, from another point of view, unemployment can have a positive impact because it determines a bigger number of persons to choose to become entrepreneurs, by starting their own business. Regarding the influence of unemployment on the

motivations for entrepreneurship, we observe that the increase in unemployment determines an increase in entrepreneurship motivated by necessity because people are losing their jobs and try to find alternatives for obtaining income. Also, a high level of unemployment appears in relation with the stagnation of economic growth, which has the effect of reducing entrepreneurial opportunities (Vidal-Suñé & Lopez-Panisello, 2013; Wennekers et al., 2005). Consequently:

Hypothesis 2: the Unemployment rate is positively related to total entrepreneurial activity and necessity motivated entrepreneurs, and negatively related with opportunity motivated entrepreneurs.

The sign of the relationship between *inflation rate (infl)*, another important macroeconomic factor which determines entrepreneurial activity, and entrepreneurship is also not clear. Some empirical studies (Sayed & Slimane, 2014; Vidal-Suñé & Lopez-Panisello, 2013), show that if the inflation increases, on the market can appear more business opportunities because when the prices of goods and services are higher the expectations of the earnings of entrepreneurs are increasing. On the other hand, inflation can have a negative relationship with entrepreneurship because it increases the costs for creation a new business on the market (Salman, 2014). Therefore, we formulated the following hypothesis:

Hypothesis 3: Inflation rate is negatively related to total entrepreneurial activity and opportunity motivated entrepreneurs and positively associated with necessity motivated entrepreneurs.

Total tax rate (tax) is another important macroeconomic indicator which might affect entrepreneurial activity. Other studies (Djankov, Ganser, McLiesh, Ramalho, & Shleifer, 2010; Salman, 2014; Vidal-Suñé & Lopez-Panisello, 2013) analyzing the tax rate have shown that high tax rates have a negative impact on entrepreneurship because are an obstacle for creating new businesses and can lead to a decrease in business activity. Consequently:

Hypothesis 4: Tax rate is negatively related to the entrepreneurial activity.

One of the most important factors affecting the entrepreneurial process it can be considered the *access to a financial resource (dcps)*. As a proxy for this variable, we consider the percent of the domestic credit to private sector granted by banks, starting from the fact that, in the European Union member countries, the credits obtained from banks are the most important source of external financing of the enterprises. The increase in the share of domestic credit to private sector offered by banks can reflect an easier access of the firms to bank financing, which can lead to a positive effect on entrepreneurship. Easier access to finance for firms is stimulating new business start-ups and it is sustaining the development of the existing firms (Aghion, Fally, & Scarpetta, 2007; Sayed & Slimane, 2014; Vidal-Suñé & Lopez-Panisello, 2013). Other research (Hurst & Lusardi, 2004; Kim, Aldrich, & Keister, 2006; Mueller, 2006) have shown the existence of a negative relationship between access to financial resources and new business creation because access to financial resources is not considered to be a problem by the earliest stage businesses because

they usually do not use large amounts of financial capital, and the creation of new firms will continue even if their access to financial resources will be hampered, like in the case of a financial crisis. Also, our previous research on this theme has shown that the sign of the relationship between access to financial resources and entrepreneurship might be different according to the reason why a person becomes an entrepreneur. Therefore, we formulate the following hypothesis:

Hypothesis 5: Access to finance is negatively related to the entrepreneurial activity.

Besides macroeconomic conditions, entrepreneurship is also determined by the abilities of individuals and their attitudes towards entrepreneurship. The variable *perceived capabilities* (*capab*) measures the skills and knowledge that the people wanting to create a new business considering they have. Increased proportion of the people who are confident in their abilities to run a business will determine the increase of the new businesses on the market. We expect to obtain a positive sign of the relationship with this indicator even when we analyze different motivations to become entrepreneur because an individual will not decide to become an entrepreneur if knows that does not have the abilities to run a business. Thus we expect that necessity-driven entrepreneurs will be influenced by this variable because they are motivated by the need to ensure an income but if they know that do not have the abilities to run a business will be discouraged and will try to obtain income in other ways. In the same reasoning, the opportunity-driven entrepreneurs will take into account their abilities to be an entrepreneur because the existence of these abilities might ensure them higher profits.

Hypothesis 6: Perceived capabilities are positively related to the entrepreneurial activity.

The *perceived opportunities* (*opport*) represents the percent of individuals that identify the existence on the market of good opportunities to start-up a new firm. If there are perceived better opportunities to create a new business more people will be involved in entrepreneurial activities, determining an increase of the total entrepreneurial rate. But not all the individuals who become entrepreneurs respond in the same way to the opportunities offered by the environment. Some individuals react positively to a perceived market opportunity. While others – necessity driven entrepreneurs - are forced into starting a business due to unfavorable circumstances, so they will not react in the same way to the changes that appear in the perceived opportunities (Robichaud et al., 2010). Therefore, we expect to obtain the following results:

Hypothesis 7: Perceived opportunities are positively related to total entrepreneurial activity and opportunity motivated entrepreneurs, and negatively related with necessity motivated ones.

In accordance with some studies (Albulescu & Tămășilă, 2014; Arenius & Minniti, 2005), the *fear of failure* (*fof*) has a negative effect on the decision of individuals to create a new business, while the *entrepreneurial intentions* (*eint*) are positively correlated with the entrepreneurial activity. As regards the motivation of becoming

an entrepreneur we expect different signs of the relationship, the entrepreneurs motivate by necessity being in the position of not having another alternative to obtain revenues will still decide to create a new business even the fear of failure is high. The entrepreneurs motivated by opportunity, being interest to maintain or to increase their income, will be affected by any change in the fear of failure indicator.

Hypothesis 8: Fear of failure is negatively related to total entrepreneurial activity and opportunity motivated entrepreneurs, and negatively related with necessity motivated ones.

Hypothesis 9: Entrepreneurial intentions are positively related to the entrepreneurial activity.

To test the indicators influencing entrepreneurial motivation we apply econometric models. The first step of the empirical analysis is testing for the existence of unit-root for every variable included in the panel data, to see if data is stationary and if there exist false relationships among variables that might influence our results. The second step is analyzing the descriptive statistics to identify the basic characteristics of the data included in our sample. Afterwards, we analyze the correlations between variables. And, finally, we run the regression analysis using six different models for each dependent variable and also for each category of independent variables considered. To be able to identify estimated coefficients of the regression models, we have used the Pooled Least Square method, by adapting the OLS method to panel data.

The models used for the panel regression analysis has the general form:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \alpha_i + \varepsilon_{it}$$

where Y_{it} represents the dependent variable of our models (in our case: TEA or NEA or OEA); β_0 is the intercept; X_{it} is the vector of independent variables considered for our empirical models; β_1 is the coefficients for every independent variable used in the model (according to the category of variables on which we apply the model); α_i expresses the stable characteristics of the countries; $i = BE, \dots, UK$ -represents the unknown intercept of every country; $t = 2002, \dots, 2015$ is the year analyzed; ε_{it} is the error term.

Therefore, in order to test our hypothesis, we apply six different panel data model, which are presented below:

Model 1: $TEA_{it} = \beta_0 + \beta_1 gdp_{it} + \beta_2 gdpc_{it} + \beta_3 unemp_{it} + \beta_4 infl_{it} + \beta_5 tax_{it} + \beta_6 access_{it} + \alpha_i + \varepsilon_{it}$

Model 2: $TEA_{it} = \beta_0 + \beta_1 fof_{it} + \beta_2 eint_{it} + \beta_3 capab_{it} + \beta_4 opport_{it} + \alpha_i + \varepsilon_{it}$

Model 3: $OEA_{it} = \beta_0 + \beta_1 gdp_{it} + \beta_2 gdpc_{it} + \beta_3 unemp_{it} + \beta_4 infl_{it} + \beta_5 tax_{it} + \beta_6 access_{it} + \alpha_i + \varepsilon_{it}$

Model 4: $OEA_{it} = \beta_0 + \beta_1 fof_{it} + \beta_2 eint_{it} + \beta_3 capab_{it} + \beta_4 opport_{it} + \alpha_i + \varepsilon_{it}$

Model 5: $NEA_{it} = \beta_0 + \beta_1 gdp_{it} + \beta_2 gdpc_{it} + \beta_3 unemp_{it} + \beta_4 infl_{it} + \beta_5 tax_{it} + \beta_6 access_{it} + \alpha_i + \varepsilon_{it}$

$$\text{Model 6: NEA}_{it} = \beta_0 + \beta_1 \text{fof}_{it} + \beta_2 \text{eint}_{it} + \beta_3 \text{capab}_{it} + \beta_4 \text{opport}_{it} + \alpha_i + \varepsilon_{it}$$

In the following section, we present the main findings of our empirical analysis and also discussions on these results.

Results and discussions

At the beginning of the empirical part of our study, we have analyzed the descriptive statistics. Table 1 presents the results obtained for all the thirteen variables considered. Total entrepreneurial activity (TEA) registered significant variations across economies and also over the considered period of time, from 1.6% of people who are fit to work to 14%. The variation registered by TEA is explained by the differences that appear between the macroeconomic conditions of the countries from the considered sample, but also between the formal business registration and other regulatory factors that play an important role in modelling the entrepreneurial environment. The other two dependent variables considered also have registered important variations, thus the percent of the entrepreneurs motivated by necessity varied from 3 and up to 50, while the opportunity motivated entrepreneurs varied from 18% of the working age population to 80%.

As regards the independent variables we have classified them into two categories: variables expressing macroeconomic conditions and variables expressing the perceptions and attitudes regarding entrepreneurship. Therefore, among the macroeconomic factors, the domestic credit to private sector has registered the highest variation, from a value close to zero as a percent of GDP in Slovenia in 2004-2008 to 202% of GDP in Denmark in 2009. This significant disparity shows that are significant differences between the countries considered in our sample as regards their degree of financial development. Important variations were registered also for the tax rate which varied between 76% of commercial profits (Italy, 2005) to 18% (Croatia, 2014). The negative values obtained for the minimum of GDP growth and GDP per capita growth show that the European countries had a period of downturn when their economic development was seriously affected. The most stable indicator from those considered in the analysis was the level of inflation, which had the smallest standard deviation.

Table 1. The descriptive statistics of the variables considered for the analysis

Variable	Min.	Max.	Mean	Std. deviation
Dependent variables				
Total Entrepreneurial Activity	1.63	14.11	6.065	2.163
Necessity-driven entrepreneurial activity	3.00	50.17	18.934	9.829
Improvement-driven opportunity entrepreneurial activity	18.38	80.47	50.947	12.123
Variables expressing macroeconomic conditions				
GDP growth	-14.35	26.30	1.544	3.732

GDP per capita growth	-12.92	25.60	1.318	3.801
Unemployment rate	2.60	27.20	8.929	4.424
Inflation rate	-4.48	22.54	2.454	2.635
Total tax rate	18.40	76.70	44.480	13.321
Access to financial resource	0.19	202.19	95.169	44.088
Variables expressing the perceptions and attitudes regarding entrepreneurship				
Fear of failure	15.12	61.58	36.137	7.537
Entrepreneurial intentions	1.55	31.70	9.131	4.964
Perceived capabilities	14.58	60.67	42.094	7.665
Perceived opportunities	2.85	71.49	32.028	13.645

From the second category of independent variables, the perceived opportunities varied the most, from almost 3% of working age population seeing good opportunities to start a business in the area they live in 2009 in Hungary to 71% of working age population in Sweden in 2011. The most stable indicator from those considered in the analysis was the one expressing entrepreneurial intentions, which had the smallest standard deviation.

To statistically analyze the data from our sample, we first tested the considered variables for the existence of a unit-root, to test the stationarity of the variables and to identify if there are false relations among variables. The null hypothesis considers that all the variables analyzed have a unit-root. In our case, this null hypothesis was rejected in almost all the cases. We found that some variables had a unit-root: unemployment, domestic credit granted to the private sector and entrepreneurial intentions. For these variables, we calculate the first difference in order to further apply the regression analysis.

To be sure that the results obtained from the regression analysis are accurate we have taken into consideration the problem of multicollinearity. The results of the correlation test show that some of the independent variables are correlated, namely: GDP growth is strongly correlated with GDP per capita growth; unemployment rate is strongly correlated with total tax rate, and entrepreneurial intentions are strongly correlated with unemployment rate, total tax rate and fear of failure (according to the reference point of 0.80 – similar to the reference point considered by Bryman & Cramer, 2001). To overcome the influence of the highly correlated variables on our results we have used separate regression models in order to avoid including in the same regression the highly correlated variables.

The purpose of the regression analysis performed was to identify which of the considered indicators are between the main determinants for the total entrepreneurial activity in the European countries and also of the necessity and opportunity driven entrepreneurship. We use six regression models: for the first two models the dependent variable is total entrepreneurial activity, for the following two is necessity-driven entrepreneurship and for the last two models we consider as dependent variable opportunity-driven entrepreneurship. The summary of the results obtained after performing the regression models is presented in Table 2. Based on the results obtained after applying the regression models, we observe that

macroeconomic indicators that are influencing the decision to become an entrepreneur and their sign differ depending on the dependent variable analyzed and the motivation. Also, the entrepreneurial perception factors are significantly influencing entrepreneurship, and also on the motivations for creating a new business.

Table 2. Main determinants of entrepreneurial motivations in EU

	Model 1 (dependent variable TEA)		Model 3 (dependent variable NEA)		Model 5 (dependent variable OEA)	
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
GDP growth	0.007	0.789	-0.550***	0.000	0.104	0.451
GDP per capita growth	0.018	0.569	-0.037	0.845	0.067	0.638
Unemployment rate	0.093***	0.000	1.170***	0.000	-1.552***	0.000
Inflation rate	-0.063	0.369	0.752**	0.012	-1.174***	0.002
Total tax rate	-0.066***	0.000	-0.179***	0.000	0.108	0.169
Access to financial resource	-0.008***	0.024	-0.079***	0.000	0.045**	0.015
<i>R-squared/ F-test</i>	0.1605 9.133***		0.3704 30.606***		0.3705 23.842***	
	Model 2 (dependent variable TEA)		Model 4 (dependent variable NEA)		Model 6 (dependent variable OEA)	
Fear of failure	-0.061***	0.000	0.230***	0.000	-0.427***	0.000
Entrepreneurial intentions	0.242***	0.000	0.501***	0.000	0.353***	0.000
Perceived capabilities	0.132***	0.000	0.305***	0.000	-0.091	0.182
Perceived opportunities	0.018***	0.000	-0.319***	0.000	0.420***	0.000
<i>R-squared/ F-test</i>	0.4894 75.097***		0.3114 33.622***		0.3828 37.021***	

*** and *** denotes that coefficients are significantly at 5% respectively at 1% level.*

For Model 1, we observe that unemployment rate, total tax rate and domestic credit to the private sector are statistically significant factors that affect total entrepreneurial activity. Unemployment rate (as a percent of total labor force) has a positive coefficient, statistically significant at 1% level, and it shows that higher unemployment rates in the EU-18 economies will determine a bigger number of persons to choose to become entrepreneurs, by starting their own business, increasing the total entrepreneurship rate. These results are in line with the findings of Vivarelli (2013) which highlighted that job losses have an important effect on the creation of new firms at the national level because entrepreneurship is often considered an escape from unemployment. But also with the findings of Lasch et al.

(2007) and Fairlie (2013) which emphasize that unemployment rate of a country is positively related to entrepreneurship level.

Total tax rate (as a percent of commercial profits) has a negative statistically significant coefficient at 1% level. This result shows that higher tax rates can determine the decrease of entrepreneurial activity in an economy because taxes are considered to hamper the start-up of new firms and also are decreasing business activity. Thus, when the total tax rate of EU 18 countries is increasing the total entrepreneurship rate will suffer a decrease. These findings are in line with the findings of other studies (Arin, Huang, Minniti, Nandialath, & Reich, 2015; Briscoe, 2000; Bruce & Mohsin, 2006; Djankov et al., 2010; Klapper, Laeven, & Rajan, 2006; Salman, 2014; Sayed & Slimane, 2014; Vidal-Suñé & Lopez-Panisello, 2013).

The access to finance (as a percent of GDP), expresses the level of domestic credit granted to the private sector, has also a negative statistically significant coefficient at 5% level. The inverse relationship between the access to finance and total entrepreneurship is the result of the fact that a big percentage of firms usually do not use large amounts of money in their early stages of existence, and, thus, firms will continue to appear on the market even when the access to loans is harder. Therefore, in these conditions will result in an increase of total entrepreneurship rate. Our findings are in line with the results obtained by Hurst and Lusardi (2004), Kim et al. (2006) and Mueller (2006).

The other considered variables: GDP growth, GDP per capita growth and the inflation rate have not a statistically significant effect on total entrepreneurial activity. The effects of the considered variables combined for this model had a small effect on total entrepreneurship rate as shown by the R-squared value of only 16%. This low value obtained for R-squared shows that we should analyze also other economic indicators that could have also a significant influence on entrepreneurial activity.

For Model 2, we observe that all the indicators measuring the perceived abilities of individuals and their attitudes towards entrepreneurship have a statistically significant (at 1% level) influence on total entrepreneurial activity. The fear of failure has a negative relationship with total entrepreneurial activity rate and this shows that when the fear of failing in business is increasing entrepreneurial activity will be discouraged. This result is in line with the findings of Albulescu and Tămășilă (2014). The other three variables have a positive coefficient, as we expected. When the perceptions of the opportunities offered by the market are higher, and the entrepreneurs consider that have increased entrepreneurial capabilities, the entrepreneurial activity is stimulated.

The effects of the considered variables for this model have an important impact on total entrepreneurship rate as shown by the R-squared value of around 50%. But, this value of R-squared shows that we should analyze also other perceptual indicators that could have also a significant influence on entrepreneurial activity. The empirical findings of Model 3 emphasize that GDP growth, unemployment rate, inflation rate, total tax rate and domestic credit to the private sector are the main factors affecting necessity driven entrepreneurship. The coefficient for GDP growth

(annual percent) is negative and statistically significant at 1% level, in line with the findings of Shane (2008) and Albiol (2014). These authors show that when the countries have obtained economic growth, their entrepreneurship rates have declined. So, the growth of societal wealth is negatively correlated to entrepreneurship motivated by necessity because when the incomes are rising there appear more lucrative employment opportunities than running own business. Also, the coefficient for the total tax rate (as a percent of commercial profits) is negative and statistically significant at 1% level. This result shows that the tax rate appears as an important obstacle to entrepreneurship motivated by necessity because increasing tax rates as a percent of commercial profits discourage the creation of new firms. Our outcome in line with our expectations and also with the findings of Djankó et al. (2010), Klapper et al. (2006), Salman (2014), and Sayed and Slimane (2014).

The indicator expressing the ease of accessing financial resources (as a percent of GDP), has also a negative statistically significant coefficient at 1% level. Access to finance and entrepreneurship motivated by necessity are negatively related because the new firms created do not need large amounts of money in their early stages of development, and the persons deciding to become entrepreneur by necessity will still create the new business even if obtaining external financing will become harder, because it does not have another alternative to obtaining income. These findings are in agreement with other results obtained in the literature by Hurst and Lusardi (2004), Kim et al. (2006) and Mueller (2006).

Unemployment rate (as a percent of total labor force) has a positive coefficient, statistically significant at 1% level. This result shows that, in the EU-18 countries, higher rates of unemployment determine an increase of the entrepreneurs motivated by necessity because individuals are losing their jobs, cannot find other jobs and are interested to secure their living income. A couple of empirical studies have also shown that higher unemployment rates in national economies increase the probability that individuals will decide to become entrepreneurs (Fairlie, 2013; Lasch et al., 2007; Vidal-Suñé & Lopez-Panisello, 2013; Vivarelli, 2013; Wennekers et al., 2005).

Inflation rate (consumer prices, annual percent) has a positive coefficient, statistically significant at 5% level. An increase in inflation rate has the effect of increasing business opportunities on the market because higher price levels for products and services can lead to increased expectations of the earnings of entrepreneurs. Thus, the entrepreneurship motivated by necessity has a positive relationship with inflation, our results being similar to the ones from the literature in the field. Thus, the empirical studies realized by Shaperó (1978), Gibb and Ritchie (1982), He (2011), Vidal-Suñé and Lopez-Panisello (2013) and Sayed and Slimane (2014) have shown that inflation induces more entrepreneurship.

GDP per capita growth (annual percent) does not have a statistically significant effect on necessity-driven entrepreneurs from EU-18 countries. The effects of the considered variables combined for this model had a medium impact on entrepreneurship motivated by necessity as shown by the R-squared value of 37%.

This value obtained for R-squared shows that we should choose also other variables that may have a significant influence on necessity-driven entrepreneurship.

For Model 5, we observe that unemployment rate, inflation rate and domestic credit to the private sector are statistically significant factors that affect entrepreneurship motivated by the opportunity in the EU-18 countries. These three variables also have an effect on necessity driven entrepreneurship, but the sign of the coefficients is opposite to those obtained for entrepreneurs motivated by necessity. Therefore, unemployment rate (as a percent of total labor force) has a negative coefficient, statistically significant at 1% level. This result shows that a significant increase in the rate of unemployment might have as a result the stagnation of economic growth, and thus fewer entrepreneurial opportunities. Thus, opportunity driven entrepreneurs are discouraged by higher rates of unemployment. These results are in agreement with our expectations and with the ones obtained by Wennekers et al. (2005) and Vidal-Suñé and Lopez-Panisello (2013).

Inflation rate (consumer prices, annual percent) has a negative coefficient, statistically significant at 1% level. Thus, the inflation rate has a negative relationship with the opportunity driven entrepreneurs, because a higher rate of inflation determines the increase of costs for starting a new business and running an existing one and this type of entrepreneurs are discouraged because they seek to gain important earnings from entrepreneurial activity and inflation rate reduces the reward obtained from entrepreneurship. This result is in line with the findings of Salman (2014) and Arin et al. (2015).

Domestic credit to private sector (as a percent of GDP) has a positive coefficient, statistically significant at 5% level. An increase of the domestic credit granted to the private sector may reflect easier access to financial resources and has a positive relationship with entrepreneurship motivated by opportunity. Our empirical results are in agreement with the findings of other empirical studies (Aghion et al., 2007; Naudé, 2009; Reynolds et al., 2001; Sayed & Slimane, 2014; Vidal-Suñé & Lopez-Panisello, 2013).

The other considered indicators (GDP growth, GDP per capita growth and tax rate) do not have a statistically significant effect on the entrepreneurs driven by opportunity from EU 18 countries. The combined effects of the variables for this model show a medium impact on entrepreneurship motivated by opportunity as emphasized by the R-squared value of 37%. This value obtained for R-squared shows that we should consider other indicators which might have a significant influence on opportunity-driven entrepreneurship.

The model 4 and 6 highlights that there are important differences between the effects of the perceived abilities and attitudes of individuals on entrepreneurial activity, considering varied entrepreneurial motivations. The fear of failure has a positive sign for necessity driven entrepreneurs and a negative one for opportunity driven entrepreneurs. The fear of failing in business activity is discouraging the entrepreneurs that intent to increase their income from the entrepreneurial activity. The entrepreneurs motivated by necessity will still continue to create new

businesses, even though the fear of failing is higher because they do not have other alternative for obtaining incomes and prefer to assume some risks.

The entrepreneurial intentions have a positive relation with the entrepreneurial activity regardless of the reason why individuals have become entrepreneurs. If the percent of working age population who intend to start a business is higher it will determine an increase of entrepreneurial activity in the future.

The variable expressing the perception of individuals regarding their capabilities to run a business has a positive effect on entrepreneurship motivated by necessity. If a large number of people that do not have any other option for obtaining income are confident in their abilities to run a business, then it will determine the increase of entrepreneurship motivate by necessity. In the case of opportunity driven entrepreneurs, perceived capabilities do not have a statistically significant effect on entrepreneurial activity.

Regarding the variable perceived opportunities, we observe that not all individuals respond in the same way to the opportunities offered by the market. Thus, some individuals react positively to a better perceived market opportunity while others are forced into starting a business due to unfavorable circumstances, so they will react in different ways to the changes that appear in the perceived opportunities.

The results obtained for these models are in line with our expectations. The effects of the considered variables on entrepreneurial activity, taking into account the motivation of individuals is relatively small, as shown by R-squared values obtained for model 4 and 6 (of 31% and 38%). Observing the values of R-squared we can conclude that we should analyze also other categories of indicators that could have a significant influence on entrepreneurial activity.

The low values of R-squared, fewer than 50%, for all the considered models show that we should analyze also other categories of indicators that could have a significant influence on entrepreneurial activity. This is the limitation of our study. So, in further research we intend to consider also other indicators besides those analyzed here, from each category, and also to consider the effects of other categories of factors.

Conclusions

In this paper, we have analyzed some of the determinants of entrepreneurial motivation for the countries from European Union. The purpose of our empirical study was to test the main hypotheses formulated but also to identify the impact of the considered variables on total entrepreneurial activity, necessity driven entrepreneurial activity, and opportunity driven entrepreneurial activity. For better results, we have included the considered indicators into two categories, respectively macroeconomic and perceptual indicators. We applied six panel data regression models.

The empirical results obtained confirm our hypotheses and show that some of the considered indicators are important determinants of entrepreneurial activity in the EU countries. These results are in line with the findings of other empirical studies. Thus, total entrepreneurial activity is influenced by three macroeconomic indicators. TEA is positively influenced by the unemployment rate, and negatively by tax rate and access to financial resources. From the category of abilities and attitudes towards entrepreneurship, all the considered indicators have an important influence on total entrepreneurship. The relationship between fear of failure and TEA is negative. On the other hand, the relationship between entrepreneurial intentions, perceived capabilities and perceived opportunities and TEA is positive.

With respect to the motivation of entrepreneurial activity, our empirical results have highlighted important differences. Thus, as regards the macroeconomic indicators, the level of economic development of a country and total tax rate exert a negative influence only on the necessity driven entrepreneurs. The other three indicators with significant influence on entrepreneurial activity are unemployment rate, inflation rate and access to financial resources, and have different signs according to the motivation of individuals to become entrepreneurs. Therefore, necessity-driven entrepreneurs are positively influenced by unemployment rate and inflation rate and negatively influenced by the access to financial resources. On the other hand, opportunity motivated entrepreneurs are negatively influenced by unemployment rate and inflation rate and positively influenced by the access to finance.

For the category of perceptual indicators, we also observe important differences according to the motivation of individuals. Fear of failure is discouraging the opportunity driven entrepreneurs but does not hamper the creation of new firms by the necessity driven entrepreneurs. Higher entrepreneurial intentions determine the increase of entrepreneurial activity regardless of the individual motivations. Perceived capabilities only affect positively the necessity driven entrepreneurs. And, low perceived opportunities offered by the market are discouraging the entrepreneurs motivated by opportunity, but do not stop the creation of new firms by the entrepreneurs motivated by necessity.

Therefore, we conclude that the economic conditions, individual abilities and the perceptions regarding entrepreneurship are between the determinant factors that influence the entrepreneurial activity, depending on entrepreneur's motivations in the European Union countries. The cumulative effects of the mentioned variables, for each individual model, had a small or medium impact on entrepreneurial activity, but also on necessity driven entrepreneurial activity and opportunity driven entrepreneurial activity, showing that we should consider also other factors as determinants of entrepreneurship. In our future research, we will consider also other indicators besides those analyzed here.

Acknowledgement. *At the origin of this article is a study presented at the International Conference Entrepreneurs. Entrepreneurship – Challenges and Opportunities in the 21st Century, May 18-20, 2017, Bucharest, Romania, with the title: An Empirical Analysis on Entrepreneurial Activity Determinants in European Union Countries. This paper is an extended and improved version of the aforementioned study. This work was supported by a grant of the*

"Alexandru Ioan Cuza" University of Iasi, within the Research Grants program, Grant UAIC, code GI-UAIC-2017-02

References

- Acs, Z.J., Desai, S., and Hessels, J. (2008). Entrepreneurship, economic development and institutions. *Small Business Economics*, 31(3), 219-234.
- Aghion, P., Fally, T., and Scarpetta, S. (2007). Credit constraints as a barrier to the entry and post-entry growth of firms. *Economic Policy*, 22(52), 731-779.
- Albiol, J. (2014). *The Significance of Business Exit for Future Entrepreneurial Activity* (Working Paper 2072/238221). Retrieved from <http://hdl.handle.net/2072/238221>.
- Albulescu, C.T., and Tămășilă, M. (2014). The impact of FDI on entrepreneurship in the European Countries. *Procedia - Social and Behavioural Sciences*, 124, 219-228.
- Amorós, J.E., Borraz, F., and Veiga, L. (2016). Entrepreneurship and socioeconomic indicators in Latin America. *Latin American Research Review*, 51(4), 186-201.
- Amorós, J.E., Ciravegna, L., Mandakovic, V., and Stenholm, P. (2017). Necessity or opportunity? the effects of State fragility and economic development on entrepreneurial efforts. *Entrepreneurship Theory and Practice*. Retrieved from <https://doi.org/10.1177/1042258717736857>.
- Amorós, J.E., and Stenholm, P. (2014). The Influence of the quality of government institutions on entrepreneurial motivation: exploring the variance across countries. Retrieved from https://ddd.uab.cat/pub/worpaper/2014/hdl_2072_234063/DTDEE14_01.pdf.
- Angulo-Guerrero, M.J., Pérez-Moreno, S., and Abad-Guerrero, I.M. (2017). How economic freedom affects opportunity and necessity entrepreneurship in the OECD countries. *Journal of Business Research*, 73, 30-37.
- Aparicio, S., Urbano, D., and Audretsch, D. (2016). Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence. *Technological Forecasting and Social Change*, 102, 45-61.
- Ardagna, S., and Lusardi, A. (2008). Explaining international differences in entrepreneurship: The role of individual characteristics and regulatory constraints. In Lerner, J. and Schoar, A. (Eds.), *International Differences in Entrepreneurship* (pp.17-62). Chicago: University of Chicago Press.
- Ardagna, S., and Lusardi, A. (2009). Where does regulation hurt? Evidence from new businesses across countries. Retrieved from <http://www.dartmouth.edu/~alusardi/Papers/Feb2009paper.pdf>.
- Arenius, P., and Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics*, 24(3), 233-247.
- Arin, K.P., Huang, V.Z., Minniti, M., Nandialath, A.M., and Reich, O.F. (2015). Revisiting the determinants of entrepreneurship: A Bayesian approach. *Journal of Management*, 41(2), 607-631.
- Block, J., and Wagner, M. (2010). Necessity and opportunity entrepreneurs in Germany: characteristics and earnings differentials. *Schmalenbach Business Review*, 62, 154-174.

- Bosma, N., and Schutjens, V. (2011). Understanding regional variation in entrepreneurial activity and entrepreneurial attitude in Europe. *The Annals of Regional Science*, 47(3), 711-742.
- Briscoe, G., Dainty, A., and Millett, S. (2000). The impact of the tax system on self-employment in the British construction industry. *International Journal of Manpower*, 21(8), 596-614.
- Bruce, D., and Mohsin, M. (2006). Tax policy and entrepreneurship: New time series evidence. *Small Business Economics*, 26(5), 409-425.
- Bryman, A., and Cramer, D. (2001). *Quantitative Data Analysis with SPSS Release 10 for Windows: A Guide for Social Scientists*. Hove: Routledge.
- Chowdhury, F., Terjesen, S., and Audretsch, D. (2015). Varieties of entrepreneurship: institutional drivers across entrepreneurial activity and country. *European Journal of Law and Economics*, 40(1), 121-148.
- Djankov, S., Ganser, T., McLiesh, C., Ramalho, R., and Shleifer, A. (2010). The Effect of Corporate Taxes on Investment and Entrepreneurship. *American Economic Journal: Macroeconomics*, 2(3), 31-64.
- Fairlie, R.W. (2013). Entrepreneurship, economic conditions, and the great recession. *Journal of Economics & Management Strategy*, 22(2), 207-231.
- Freytag, A., and Thurik, R. (2007). Entrepreneurship and its determinants in a cross-country setting. *Journal of evolutionary Economics*, 17(2), 117-131.
- Fuentelsaz, L., González, C., Maicas, J.P., and Montero, J. (2015). How different formal institutions affect opportunity and necessity entrepreneurship. *BRQ Business Research Quarterly*, 18(4), 246-258.
- Gibb, A., and Ritchie, J. (1982). Understanding the process of starting small businesses. *European Small Business Journal*, 1(1), 26-45.
- Global Entrepreneurship Monitor (2017). GEM Key indicators. Retrieved from <http://www.gemconsortium.org/data/key-indicators>
- Gries, T., and Naudé, W. (2009). Entrepreneurship and regional economic growth: towards a general theory of start-ups. *Innovation–The European Journal of Social Science Research*, 22(3), 309-328.
- Grilo, I., and Thurik, R. (2004). Determinants of Entrepreneurship in Europe. Retrieved from <https://repub.eur.nl/pub/1823/ERS%202004%20106%20ORG.pdf>.
- Grilo, I., and Thurik, R. (2005). Latent and Actual Entrepreneurship in Europe and the US: Some Recent Developments. *International Entrepreneurship and Management Journal*, 1(4), 441-459.
- He, C. (2011). Inflation, Entrepreneurship and Growth. Retrieved from: <http://econ.shufe.edu.cn/upload/htmleditor/Image/121114105027.pdf>
- Ho, Y.P., and Wong, P.K. (2005). Availability of financing, regulatory business costs and national entrepreneurial propensity. Retrieved from <http://econwpa.repec.org/eps/io/papers/0504/0504025.pdf>.
- Hurst, E., and Lusardi, A. (2004). Liquidity constraints, household wealth, and entrepreneurship. *Journal of political Economy*, 112(2), 319-347.
- Kim, P.H., Aldrich, H.E., and Keister, L.A. (2006). Access (not) denied: The impact of financial, human, and cultural capital on entrepreneurial entry in the United States. *Small Business Economics*, 27(1), 5-22.

- Kim, Y., Kim, W., and Yang, T. (2010). *The Effect of Public Policy on Entrepreneurial Activity: Evidence from OECD Countries*. Paper presented at ICSB World Conference, Ohio, USA
- Klapper, L., Amit, R., Mauro, F.G., and Delgado, M.J.Q. (2007). Entrepreneurship and firm formation across countries. Retrieved from http://siteresources.worldbank.org/INTFR/Resources/Entrepreneurship_and_Firm_Formation_Sep_2007.pdf.
- Klapper, L., and Love, I. (2011). The impact of the financial crisis on new firm registration. *Economics Letters* 113(1), 1-4.
- Klapper, L., Laeven, L., and Rajan, R. (2006). Entry regulation as a barrier to entrepreneurship. *Journal of Financial Economics*, 82(3), 591-629.
- Klapper, L., Love, I., and Randall, D. (2015). New firm registration and the business cycle. *International Entrepreneurship and Management Journal*, 11(2), 287-306.
- Lasch, F., Gundolf, K., and Kraus, S. (2007). The impact of unemployment on entrepreneurship: empirical evidence from France. *International Journal of Business Research*, 7(2), 1-8.
- Levie, J., and Autio, E. (2008). A theoretical grounding and test of the gem model. *Small Business Economics*, 3(3), 235-263.
- Lynch, M., Slåttsveen, K., Lozano, F., Steinert, M., Andersson, G. (2017). Examining entrepreneurial motivations in an education context. In *Proceedings of the 21st International Conference on Engineering Design* (Vol 9, pp.79-88). Vancouver, Canada: Design Society.
- Mueller, P. (2006). Entrepreneurship in the region: breeding ground for nascent entrepreneurs?. *Small Business Economics*, 27(1), 41-58.
- Naudé, W. (2009). *Out with the sleaze, in with the ease: Insufficient for entrepreneurial development?* (WIDER Research Paper 01). Retrieved from <https://www.wider.unu.edu/sites/default/files/rp2009-01.pdf>.
- Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez- Garcia, P., and Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998–2003. *Small Business Economics*, 24(3), 205-231.
- Reynolds, P.D., Camp, S.M., Bygrave, W.D., Autio, E., and Hay, M. (2001). *Global Entrepreneurship Monitor: Executive Report*. London: Babson College, London Business School and Kauffman Foundation.
- Robichaud, Y., LeBrasseur, R., and Nagarajan, K.V. (2010). Necessity and Opportunity-driven Entrepreneurs in Canada: An Investigation into their Characteristics and an Appraisal of the Role of Gender. *The Journal of Applied Business and Economics*, 11(1), 1-59.
- Salman, D.M. (2014). Mediating role of research and development on entrepreneurial activities and growth: Evidence from cross-country data. *World Journal of Entrepreneurship, Management and Sustainable Development*, 10(4), 300-313.
- Sayed, O., and Slimane, S.B. (2014). An Appraisal of the Determinants of Entrepreneurship in Developing Countries: The Case of the Middle East, North Africa and Selected Gulf Cooperation Council Nations. *African Journal of Social Sciences* 4(4), 63-74.

- Shane, S.A. (2008). *The illusions of entrepreneurship: The costly myths that entrepreneurs, investors, and policy makers live by*. New Haven: Yale University Press.
- Shapero, A. (1978). The role of entrepreneurship in economic development at the less-than-national level. In Froedman, R., and Schweke, W. (Eds.), *Expanding the Opportunity to Produce: Revitalizing the American Economy through New Enterprise Development* (pp.56-65). Washington, DC, USA: The Corporation for Enterprise Development.
- Simón-Moya, V., Revuelto-Taboada, L., and Guerrero, R.F. (2014). Institutional and economic drivers of entrepreneurship: An international perspective. *Journal of Business Research*, 67(5), 715-721.
- Smith-Hunter, A., Kapp, J., and Yonkers, V. (2003). A psychological model of entrepreneurial behavior. *Journal of Academy of Business and Economics*, 2(2), 180-192.
- Stenholm, P., Acs, Z.J., and Wuebker, R. (2013). Exploring country-level institutional arrangements on the rate and type of entrepreneurial activity. *Journal of Business Venturing*, 28(1), 176-193.
- Stephan, U., Hart, M., Mickiewicz, T., and Drews, C.C. (2015). Understanding motivations for entrepreneurship. Retrieved from <https://www.enterpriseresearch.ac.uk/wp-content/uploads/2015/02/Understanding-Motivations-for-Entrepreneurship-Rapid-evidence-assessment-paper..pdf>.
- Sternberg, R., and Wennekers, S. (2005). Determinants and effects of new business creation using global entrepreneurship monitor data. *Small Business Economics*, 24(3), 193-203.
- Thurik, A.R., Martin A., Carree, M.A., van Stel, A., and Audretsch, D.B. (2008). Does self-employment reduce unemployment?. *Journal of Business Venturing*, 23(6), 673-686.
- Valdez, M.E., and Richardson, J. (2013). Institutional determinants of macro-level entrepreneurship. *Entrepreneurship: theory and practice*, 37(5), 1149-1175.
- van Stel, A., Storey, D.J., and Thurik, A.R. (2007). The effect of business regulations on nascent and young business entrepreneurship. *Small Business Economics*, 28(2-3), 171-186.
- van Stel, A.J, Wennekers, A.R.M, Reynolds, P., and Thurik, A.R. (2004). Explaining variation in nascent entrepreneurship. Retrieved from <http://hdl.handle.net/1765/9716>.
- Vidal-Suñé, A., and Lopez-Panisello, M.B. (2013). Institutional and economic determinants of the perception of opportunities and entrepreneurial intention. *Investigaciones Regionales - Journal of Regional Research*, 26(1), 75-96.
- Vivarelli, M. (2013). Is entrepreneurship necessarily good? Microeconomic evidence from developed and developing countries. *Industrial and Corporate Change*, 22(6), 1453-1495.
- Vliamos, S.J., and Tzeremes, N.G. (2012). Factors influencing entrepreneurial process and firm start-ups: evidence from central Greece. *Journal of the Knowledge Economy*, 3(3), 250-264.

- Wennekers, S., Uhlaner, L.M., and Thurik, R. (2002). Entrepreneurship and its conditions: a macro perspective. *International Journal of Entrepreneurship Education*, 1(1), 25-64.
- Wennekers, S., van Stel, A., Thurik, R., and Reynolds, P. (2005). Nascent Entrepreneurship and the level of economic development. *Small Business Economics* 24(3), 293-309.
- Wolters, T. (2000). Nascent entrepreneurship in the Netherlands: a glimpse behind the scenes of business start-ups. In EIM (Ed.), *Entrepreneurship in the Netherlands; opportunities and threats to nascent entrepreneurship* (pp.3-17). Zoetermeer: EIM Small Business Research and Consultancy.
- Wong, P.K., Ho, Y.P., and Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, 24(3), 335-350.
- World Bank (2017). DataBank. Retrieved from <http://databank.worldbank.org/data/home.aspx>.

Received: October 12, 2017
Accepted: March 7, 2018